

**SPATIOTEMPORAL ANALYSIS OF CLIMATE CHANGE IMPACT ON KURUMBAR
VALLEY GLACIERS GHIZAR DISTRICT PAKISTAN**

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Abstract

Climate change impact on the water resource particularly on glaciers is one of the important issues of today's era on the Earth surface. Glaciers located on the mountain ranges of the World namely Alps, Himalaya, Karakoram and Hindu Kush have thousands of glaciers and glacial lakes. Among the aforementioned ranges, Hindu Kush glaciers are visible indicators of the Climate Change as they show shrinkage of glacier cover area, formation of nascent glacial lakes and rise in glacial lake outburst flood events. This study presents spatiotemporal analysis of precipitation and temperature trends and GIS & RS based investigation of the glacier dynamics in Kurumbar valley of District Ghizar in Gilgit Baltistan region. Temporal glaciers were delineated using objected based classification couple with manual digitization of accurate glacier outlines in debris cover area on high resolution imagery. Final results were validated with field assessment and ICIMOD inventory data. Kurumbar valley is located in Ishkoman tehsil, Ghizar District that borders with Yarkhun valley of Chitral in Northwest and District Hunza in East. The valley is at about 45 km from District headquarter Gahkuch. This valley covers an area of about 1856.45sq.km having 53 sub watersheds, 149 glaciers and 30 glacial and alpine lakes. Trend and correlation analysis for period from 1990 to 2010 at 2 Climate stations and 10 weather monitoring posts (WMPs) show that there is rise in 1.2 Degree of annual temperature and increase of 20 mm precipitation. Temporal dynamics of glaciers in Kurumbar valley show that there is decrease of snow and glacier cover area from 261.49 to 241 sq.km and increase of debris cover from 73.54 to 88.93 sq.km between years 2000 to 2015. Overall glaciers of the Kurumbar valley are in retreating phase and dire need of monitoring of glaciers behavior with respect to climate change impact.